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Attorney Docket No: MCS-071-00

REMARKS

In response to the Office Action dated November 10, 2003 (Paper No. 13), claims 1, 16 and 18 have been amended. Therefore, claims 1-13 and 15-30 remain in the case. Reexamination and reconsideration of the amended application are requested.

Section 103(a) Rejections

The Office Action rejected claims 1-9, 15-23 and 25-30 under 35 U.S.C. § 103(a) as being unpatentable over Ippolito et al. (U.S. Patent No. 6,072,522) in view of McCall et al. (U.S. Patent No. 6,002,430). The Office Action contended that Ippolito et al. disclose all elements of the Applicants' claimed invention except for specifically teaching "the camera system comprising a seamless omni-directional camera system that provides a seamless omni-directional image." However, the Office Action maintained that McCall et al. disclose this element. Therefore, the Office Action maintained that it would have been obvious to a person of ordinary skill in the art at the time the invention was made "to modify Ippolito in using the seamless omni-directional camera system, as per teaching of McCall, because it improves the automated event presentation system by providing the maximum amount of viewing coverage without the bulk of additional cameras."

In response, the Applicants respectfully traverse these rejections based on the amendments to claims 1, 16 and 18 and the following legal and technical analysis. The Applicants submit that the combination of Ippolito et al. and McCall et al. is lacking at least one element of the Applicants' claimed invention. In particular:

- + for independent claim 1, the combination of Ippolito et al. and McCall et al. does not disclose, either explicitly or implicitly, the material claimed feature of determining the event participants that are speaking using audio analysis including a microphone-array sound source localization technique to alleviate camera view switching delays.
- + for independent claim 8, the combination does not disclose, either explicitly

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or implicitly, the material claimed feature of switching instantaneously between views of the event participants in the omni-directional image.

- + for independent claim 18, the combination does not disclose, either explicitly or implicitly, the material claimed features of: (a) automatically tracking event participants using audio and video processing techniques and switching instantaneously between views of the event participants in the omni-directional image; and (b) switching instantaneously between views of the event participants in the omni-directional image.
- + for independent claim 21, the combination does not disclose, either explicitly or implicitly, the material claimed feature of applying a set of expert production rules based at least in part on a display history of an event participant.
- + for independent claim 29, the combination does not disclose, either explicitly or implicitly, the material claimed feature of a virtual director module that uses audio and video processing techniques to automatically select without user intervention at least a portion of the omni-directional image for use as an output view.

Further, the combination of Ippolito et al. and McCall et al. fail to appreciate the advantages of these claimed features. In addition, there is no technical suggestion or motivation disclosed in Ippolito et al. and McCall et al. to define these claimed features. Thus, the Applicants submit that the combination of Ippolito et al. and McCall et al. cannot make obvious the Applicants' claimed features mentioned above with regard to claims 1, 8, 18, 21 and 29.

To make a prima facie showing of obviousness, all of the claimed features of an Applicant's invention must be considered, especially when they are missing from the prior art. If a claimed feature is not disclosed in the prior art and has advantages not

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appreciated by the prior art, then no prima facie showing of obviousness has been made. The Federal Circuit Court has held that it was an error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Moreover, as stated in the MPEP, if a prior art reference does not disclose, suggest or provide any motivation for at least one claimed feature of an Applicant's invention, then a prima facie case of obviousness has not been established (MPEP § 2142).

Amended Independent Claim 1

Amended independent claim 1 of the Applicants' claimed invention includes an automated event presentation system for capturing and viewing an event having event participants. The system includes an omni-directional camera system that provides a seamless omni-directional image of the event and that simultaneously and automatically tracks event participants to determine the event participants that are speaking using audio analysis and films the event. This audio analysis includes a microphone-array sound source localization technique to alleviate camera view switching delays. The system further includes an automated online broadcasting system that controls and uses the omni-directional camera system to monitor each of the tracked event participants simultaneously, and broadcasts the event, and a viewer platform in communication with the automated online broadcasting system that allows a viewer to view the broadcasted event.

Automatic tracking of the event participants to determine which event participants are speaking means that each of the event participants can be determined and tracked (specification, paragraph 0045, lines 5-7). One way this tracking is performed is by using audio analysis, such as speaker detection techniques (specification, paragraph 0044, lines 2-7). This tracking is performed for each participant individually, simultaneously and without the need for user interaction (i.e., automatically).

Determining the event participants that are speaking involves audio analysis. This

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audio analysis uses a microphone-array sound source localization technique to determine who is talking (specification, paragraph 0044, lines 5-7). In this manner, the event participants that are speaking can be followed by switching from one camera view to another (specification, paragraph 0044, lines 3-5).

The audio analysis using a microphone-array sound source localization technique alleviates delays in switching between camera views when someone new begins talking. Specifically, "[E]ven a short delay between the time when a person begins speaking and the time when the camera view shows the speaker can be quite distracting to the viewer. This camera switching latency can distract the viewer to the point that the viewer has a negative viewing experience" (specification, paragraph 0054, lines 2-5). This latency in switching between camera views is alleviated by using the microphone-array sound source localization technique.

In contrast, Ippolito et al. merely disclose a primitive microphone array that does not use sound source localization and is quite slow. Specifically, FIG. 6 of Ippolito et al. illustrates a block diagram of the electronic circuitry required for operation of the system. Audio signals from each of the eight microphones is amplified and sent to a rectifier (col. 11, lines 20-30). This rectified audio signal is integrated to produce an averaged audio signal (col. 11, lines 30-32). The "integrating time constant of each audio signal integrator 173 is chosen so as to be appropriate for integrating the characteristics of human speech for the purposes of identifying the principle speaker from among the group of individuals participating in the local group video conference" (col. 11, lines 34-38). "Typically an integrating time constant which is of the order of 10-20 seconds will be appropriate for identifying the type of speech activity which is appropriately loud and appropriately sustained, as would be characteristic of the speech pattern of a principle speaker in the local group video conferencing environment" (col. 11, lines 38-44; emphasis added).

Ippolito et al. merely disclose an microphone array that requires on the order of 10-20 seconds to identify a speaker and to switch the camera to that speaker. Unlike the Applicants' claimed audio analysis technique, the type of microphone array described in

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Ippolito et al. clearly does not alleviate delays in switching between camera views.

McCall et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. McCall et al. merely discloses an image-capturing device for obtaining or capturing a spherical image. In short, McCall et al. is a capture device, but does not perform any type of tracking or determination of who is speaking using audio analysis. Consequently, the combination of Ippolito et al. and McCall et al. provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

Ippolito et al. and McCall et al. also both fail to appreciate or recognize the advantages of the Applicants' claimed audio analysis including a microphone-array sound source localization technique to alleviate camera view switching delays. As noted above, the Applicants' claimed audio analysis alleviates camera switching latency and gives the user a much more positive and rich viewing experience. Neither Ippolito et al. nor McCall et al. appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Ippolito et al. and McCall et al. fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of automatically tracking event participants to determine the event participants that are speaking using audio analysis including a microphone-array sound source localization technique to alleviate camera view switching delays. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Ippolito et al. and McCall et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the

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Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that amended independent claim 1 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. based on the amendments to claim 1 and the legal and technical arguments set forth above and below. Moreover, claims 2-7 depend from amended independent claim 1 and are also nonobvious over Ippolito et al. in view of McCall et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 1-7.

Independent Claim 8

Independent claim 8 of the Applicants' claimed invention includes a method for filming and recording an event having event participants and presenting the event to a viewer. The method includes filming and recording the event using an omni-directional camera system to provide a seamless omni-directional image that contains each of the event participants. The method further includes automatically determining a location of the event participants in the omni-directional image by using a speaker detection technique to determine the event participants that are speaking. The method also includes providing a user interface that allows a choice of which of the event participants in the omni-directional image to view. The choice (or selection) can be made by at least one of: (a) manually by the viewer; (b) automatically by a virtual director. The method further includes switching instantaneously between views of the event participants in the omni-directional image in response to the choice.

In contrast, as noted above, Ippolito et al. merely disclose a primitive microphone array that requires on the order of 10-20 seconds to identify a speaker and to switch the camera to that speaker. Unlike the Applicants' claimed audio analysis technique, the type

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of microphone array described in Ippolito et al. cannot provide instantaneous switching of camera views.

As stated above, McCall et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Consequently, the combination of Ippolito et al. and McCall et al. provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

Ippolito et al. and McCall et al. also both fail to appreciate or recognize the advantages of the Applicants' claimed feature of switching instantaneously between views of the event participants. Instantaneous switching alleviates camera switching latency and gives the user a much more positive and rich viewing experience. Neither Ippolito et al. nor McCall et al. appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Ippolito et al. and McCall et al. fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of switching instantaneously between views of the event participants in the omni-directional image. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Ippolito et al. and McCall et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital

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Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that Independent claim 8 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. based on the legal and technical arguments set forth above and below. Moreover, claims 9 and 15-17 depend from independent claim 8 and are also nonobvious over Ippolito et al. in view of McCall et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 8, 9 and 15-17.

Amended Independent Claim 18

Amended independent claim 18 of the Applicants' claimed invention a method for displaying at least a portion of a seamless omni-directional image capturing an event occurring within an event environment. The method includes filming the event and automatically tracking event participants using audio and video processing techniques and a single omni-directional camera system having a single camera to produce the seamless omni-directional image. The method further includes transmitting the omni-directional image from a broadcasting platform to a viewer platform using a computer network, and using the viewer platform to allow a viewer to select which portion of the omni-directional image the viewer would like to view. The method also includes switching instantaneously between views of the omni-directional image by presenting a desired portion of the omni-directional image as selected by the viewer.

The arguments for independent claim 8 regarding the Applicants' claimed feature of switching instantaneously between views of the omni-directional image also apply to claim 18.

In addition, claim 18 includes the feature of automatically tracking event participants using audio and video processing techniques. Audio processing techniques include the microphone-array sound source localization technique, as discussed above. Video processing techniques include head tracking that uses motion detection and skin color

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techniques (specification, paragraph 0048, lines 1-2).

Using a combination of audio and video processing techniques to track event participants yields better speaker detection than audio processing alone. This means that the audio processing technique can be used to check the video processing technique and vice versa. One benefit is that false positives are rejected. For example, if audio processing detects a speaker but it is only sound reflecting off the walls, the video processing will discover that there is no speaker at that location, will override the audio processing, and camera views will not be switched. Moreover, using both audio and video processing reduces error in the speaker detection. For example, head tracking can be used alone to overcome any error in an audio processing technique to precisely center the speaker's head within a camera view.

In contrast, Ippolito et al. merely disclose a primitive microphone array used to perform speaker detection. However, Ippolito et al. nowhere discuss using combined audio and video processing techniques to track event participants and provide speaker detection.

As stated above, McCall et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Consequently, the combination of Ippolito et al. and McCall et al. provides no motivation or suggestion for these claimed features of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

Ippolito et al. and McCall et al. also both fail to appreciate or recognize the advantages of the Applicants' claimed features of: (1) automatically tracking event participants using audio and video processing techniques; and (2) switching instantaneously between views. The advantages of the first feature have been noted above. The advantage of using both audio and video processing to track event participants alleviates camera switching latency, yields a more accurate speaker

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detection algorithm, and gives a user a much more positive and rich viewing experience. Neither Ippolito et al. nor McCall et al. appreciate these advantages of the Applicants' claimed features.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Ippolito et al. and McCall et al. fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed features of: (1) automatically tracking event participants using audio and video processing techniques; and (2) switching instantaneously between views. In addition to explicitly lacking these features, the combination also fails to implicitly disclose, suggest, or provide motivation for these features. Further, the combination fails to appreciate advantages of these claimed features.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Ippolito et al. and McCall et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least two material features of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that amended independent claim 18 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. based on the amendments to claim 18 and the legal and technical arguments set forth above and below. Moreover, claims 19-20 depend from amended independent claim 18 and are also nonobvious over Ippolito et al. in view of McCall et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 18-20.

Independent Claim 21

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Independent claim 21 of the Applicants' claimed invention includes an automated event presentation system for capturing an event. The system includes a high-resolution omni-directional camera system that provides an omni-directional image of the event, the omni-directional image containing multiple camera views, and an automated online broadcasting system that is capable of broadcasting the omni-directional image over a computer network. In addition, the system includes a viewer platform in communication with the computer network that receives the omni-directional image. The system also includes a virtual director module within the automated online broadcasting system that determines which of the multiple camera views within the omni-directional image to display on the viewer platform. The virtual director module determines this by applying a set of expert production rules based at least in part on a display history of an event participant.

Expert video production rules are rules that the virtual director module uses to make decisions. For example, one such expert video production rule determines which camera view is an output camera view. Other examples of expert video production rules are found in the Applicants' specification (paragraph 0051 and paragraph 0052). These expert production rules include keeping the camera view on a person even if another person begins talking if the camera has only been on the first person for a short amount of time (specification, paragraph 0051). In addition, these rules include switching the camera view off a person who is talking if that person has been talking for a long period of time (specification, paragraph 0052). These expert production rules are based in part on a display history of an event participant. In other words, the rules are based on how long an event participant has been displayed on the viewer platform.

In contrast, as admitted in the Office Action, Ippolito et al. merely uses a simplistic rule of selecting a camera based on which event participant is currently speaking. The Office Action maintains that this is the same as the Applicants' claimed set of expert video production rules based on at least in part on a display history of an event participant. Applicants, however, respectfully disagree. In Ippolito et al., there is no display history involved in determining who is currently speaking. Who is currently speaking is whom Ippolito et al. displays. On the other hand, the Applicants' claimed expert production rule

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are much richer. They are based on a display history a participant. For example, if the participant has been shown too frequently (such as if the speaker has been speaking for a long time), the expert production rules switch the camera view off that person. Ippolito et al. nowhere discusses this claimed feature of the Applicants' invention.

McCall et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Consequently, no motivation or suggestion for this feature of the Applicants' claimed invention is provided. Absent this motivation or suggestion, the combination of Ippolito et al. and McCall et al. cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

In addition to lacking this claimed feature of the Applicants' invention, the combination also fails to appreciate or recognize the advantages of the Applicants' claimed feature of the virtual director module that applies a set of expert video production rules based at least in part on a display history of an event participant. Specifically, the Applicants' claimed virtual director module allows the system to "decide on the best camera view to display to a viewer" (specification, paragraph 0049, lines 1-2). This virtually eliminates "labor costs associated with broadcasting a meeting" (specification, paragraph 0009, lines 5-7). Moreover, the expert production rules provide a more professional and pleasing product for a viewer to watch. The combination of Ippolito et al. and McCall et al. does not discuss or appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Ippolito et al. and McCall et al. fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of a virtual director module that applies a set of expert production rules based at least in part on a display history of an event participant. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

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Therefore, as set forth in *In re Fine* and MPEP § 2142, Ippolito et al. and McCall et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material features of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claim 21 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. based on the legal and technical arguments set forth above and below. Moreover, claims 22 and 23 depend from independent claim 21 and are also nonobvious over Ippolito et al. in view of McCall et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 21-23.

Independent Claim 29

Independent claim 29 of the Applicants' claimed invention includes an automated event presentation system for capturing and viewing an event having event participants. The system includes an omni-directional camera system that provides a seamless omni-directional image of the event, and a tracker module that automatically tracks the event participants simultaneously within the omni-directional image. The system also includes a virtual director module that uses audio and video processing techniques to automatically select without user intervention at least a portion of the omni-directional image for use as an output view. The system further includes an automated online broadcasting system that broadcasts the output view and the omni-directional image over a computer network, and a viewer platform in communication with the automated online broadcasting system that allows a viewer to view at least one of: (a) the output view; (b) the omni-directional image.

As stated above with regard to claim 18, using a combination of audio and video

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processing techniques to track event participants yields better speaker detection than audio processing alone. This means that the audio processing technique can be used to check the video processing technique and vice versa. For example, false positives are rejected, because if audio processing detects a speaker but it is only sound reflecting off the walls, the video processing will show no speaker at that location and will not switch camera views. Moreover, using both audio and video processing ensures that the speaker detection has only a few degrees of error. Head tracking can center the speaker's head within view and overcome any error in audio processing techniques.

In contrast, Ippolito et al. merely disclose a primitive microphone array used to perform speaker detection. However, Ippolito et al. nowhere discuss using combined audio and video processing techniques to track event participants and provide speaker detection.

As stated above, McCall et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Consequently, the combination of Ippolito et al. and McCall et al. provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

Ippolito et al. and McCall et al. also both fail to appreciate or recognize the advantages of the Applicants' claimed feature of a virtual director module that uses audio and video processing techniques to automatically select without user intervention at least a portion of the omni-directional image for use as an output view. The advantage of using both audio and video processing to track event participants alleviates camera switching latency, yields a more accurate speaker detection algorithm, and gives a user a much more positive and rich viewing experience. Neither Ippolito et al. nor McCall et al. appreciate these advantages of the Applicants' claimed feature.

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The Applicants, therefore, submit that obviousness cannot be established since the combination of Ippolito et al. and McCall et al. fail to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of a virtual director module that uses audio and video processing techniques to automatically select without user intervention at least a portion of the omni-directional image for use as an output view. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Ippolito et al. and McCall et al., either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claim 29 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. based on the legal and technical arguments set forth above and below. Moreover, claim 30 depends from independent claim 29 and is also nonobvious over Ippolito et al. in view of McCall et al. (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 29 and 30.

The Office Action rejected claims 10-13 under 35 U.S.C. § 103(a) as being unpatentable over Ippolito et al. in view of McCall et al. as applied to claim 8, and further in view of Kannes (U.S. Patent No. 5,382,972). The Office Action contended that the combination of Ippolito et al. and McCall et al. disclose or suggest most of the elements of

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the Applicants' claimed invention except that the combination "differs from the claimed invention in not specifically teaching to store annotation associated with the event and synchronizing this annotations with the event for allowing the view to select which of the annotation to store while the event is occurring or after the event occurring." (sic.)

However, the Office Action maintained that Kannes teaches this feature. Thus, the Office Action contended that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of Ippolito et al. and McCall et al. in storing annotation associated with the event and synchronizing this annotations with the event." (sic.)

In response, the Applicants respectfully traverse this rejection based on the legal and technical analysis above and below. The Applicants submit that the combination of Ippolito et al., McCall et al. and Kannes lacks at least one claimed feature of the Applicants' invention. In particular, the combination does not disclose, either explicitly or implicitly, the material claimed feature of switching instantaneously between views of the event participants in the omni-directional image. Further, the combination also fails to appreciate the advantages of this claimed feature. In addition, there is no technical suggestion or motivation disclosed in Ippolito et al., McCall et al. or Kannes to define this claimed feature. Thus, the Applicants submit that the combination of Ippolito et al., McCall et al. and Kannes cannot make obvious the Applicants' claimed feature of switching instantaneously between views of the event participants in the omni-directional image.

Independent claim 8 of the Applicants' claimed Invention includes a method for filming and recording an event having event participants and presenting the event to a viewer. The method includes filming and recording the event using an omni-directional camera system to provide a seamless omni-directional image that contains each of the event participants. The method further includes automatically determining a location of the event participants in the omni-directional image by using a speaker detection technique to determine the event participants that are speaking. The method also includes providing a user interface that allows a choice of which of the event participants in the omni-directional image to view. The choice (or selection) can be made by at least one of: (a) manually by

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the viewer; (b) automatically by a virtual director. The method further includes switching instantaneously between views of the event participants in the omni-directional image in response to the choice.

In contrast, as noted above, Ippolito et al. merely disclose a primitive microphone array that requires on the order of 10-20 seconds to identify a speaker and to switch the camera to that speaker. Unlike the Applicants' claimed audio analysis technique, the type of microphone array described in Ippolito et al. cannot provide instantaneous switching of camera views.

As stated above, McCall et al. adds nothing to the cited combination that would render the Applicants' claimed invention obvious. In addition, Kannes adds nothing to the cited combination that would render the Applicants' claimed invention obvious. Kannes merely uses a simplistic rule that selects a camera based on which event participant is currently speaking.

Consequently, the combination of Ippolito et al., McCall et al. and Kannes provides no motivation or suggestion for this claimed feature of the Applicants' claimed invention. Absent this teaching, motivation or suggestion, the combination cannot render the Applicants' claimed invention obvious (MPEP § 2143.01).

The combination of Ippolito et al., McCall et al. and Kannes also fails to appreciate or recognize the advantages of the Applicants' claimed feature of switching instantaneously between views of the event participants. Instantaneous switching alleviates camera switching latency and gives the user a much more positive and rich viewing experience. Neither Ippolito et al., McCall et al. nor Kannes appreciate these advantages of the Applicants' claimed feature.

The Applicants, therefore, submit that obviousness cannot be established since the combination of Ippolito et al., McCall et al. and Kannes fails to teach, disclose, suggest or provide any motivation for the Applicants' claimed feature of switching

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instantaneously between views of the event participants in the omni-directional image. In addition to explicitly lacking this feature, the combination also fails to implicitly disclose, suggest, or provide motivation for this feature. Further, the combination fails to appreciate advantages of this claimed feature.

Therefore, as set forth in *In re Fine* and MPEP § 2142, Ippolito et al., McCall et al. and Kannes, either alone or in combination, cannot render the Applicants' claimed invention obvious because the references are missing at least one material feature of the Applicants' claimed invention. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive supporting the combination", the rejection must be withdrawn. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); MPEP 2143.01.

Accordingly, the Applicants respectfully submit that independent claim 8 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. and further in view of Kannes based on the legal and technical arguments set forth above. Moreover, claims 10-13 depend from independent claim 8 and are also nonobvious over Ippolito et al. in view of McCall et al. and further in view of Kannes (MPEP § 2143.03). The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claims 10-13.

The Office Action rejected claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Ippolito et al. in view of McCall et al. as applied to claim 21 and further in view of Bruno et al. (U.S. Patent No. 5,710,591). The Office Action contended that the combination of Ippolito et al. and McCall et al. disclose or suggest most of the elements of the Applicants' claimed invention except that the combination "differs from the claimed invention in not specifically teaching to provide negative switching that allows switching to a camera view of a person speaking before [he] begins to speak." However, the Office

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Action maintained that Bruno et al. teach this feature. Thus, the Office Action contended that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of Ippolito et al. and McCall et al. in switching to a camera view of a person speaking before [he] begins to speak, as per teaching of Bruno, because it makes user friendly for subsequent retrieval and processing."

In response, the Applicants respectfully traverse this rejection based on the legal and technical analysis above and below. The Applicants submit that the combination of Ippolito et al., McCall et al. and Bruno et al. lacks at least one claimed feature of the Applicants' invention. In particular, the combination of Ippolito et al., McCall et al. and Bruno et al. does not disclose, either explicitly or implicitly, the material claimed feature of a switching module capable of providing negative switching that allows switching to a camera view of a person speaking before the person begins to speak.

Further, the combination of Ippolito et al., McCall et al. and Bruno et al. fails to appreciate the advantages of this claimed feature. In addition, there is no technical suggestion or motivation disclosed in the combination to define this claimed feature. Thus, the Applicants submit that the combination of Ippolito et al., McCall et al. and Bruno et al. cannot make obvious the Applicants' claimed feature.

Dependent Claim 24

Claim 24 of the Applicants' invention includes a switching module that is capable of providing negative switching. This negative switching allows the switching to a camera view of a person speaking before that person begins to speak. In other words, before a person begins to speak the camera view shows that person that will speak.

This negative switching can only be performed on recorded (or on-demand) broadcasts. In particular, "for the recorded meeting it is even possible to achieve camera switching in negative time (*or negative switching*). In other words, the camera view changes from the person talking to the person that will talk next even before the

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next person starts talking" (specification, paragraph 0054, lines 19-22; emphasis added).

In contrast, the combination of Ippolito et al., McCall et al. and Bruno et al. fails to disclose or suggest this claimed feature of the Applicants' invention. The Office Action maintained that Bruno et al. show this claimed feature at column 4, line 62 through column 5, line 7. The Applicants respectfully disagree. In these passages, Bruno et al. disclose a "voice-activated switching mode" for "controlling the video signal" (col. 4, lines 62-63). In this embodiment of Bruno et al., a control unit (MCU) "will display the image of the loudest speaking user/conferee on each of the other users' workstations" (col. 4, lines 64-65). In addition, an "image of the previous speaker's location will be displayed on the current speaker's screen" (col. 4, lines 65-67). Thus, the current speaker has displayed on his screen an image of the previous speaker while the other users have displayed on their screens an image of the current speaker.

In another embodiment, Bruno et al. disclose a "voice-activated switching mode" where the "MCU switches the video signal from the current speaker's location only when that speaker [i.e., the current speaker] stops talking" (col. 5, lines 1-3). In other words, "the MCU will change the video display only after the current speakers stops talking and a new speaker begins talking" (col. 5, lines 3-5).

Neither of these embodiments of Bruno et al. disclose or suggest the Applicants' claimed negative switching. Bruno et al. use voice-activated switching. In other words, ***only after a person's voice is detected*** does the MCU switch to that current speaker. Because it is voice-activated, it is ***impossible*** for the MCU to switch views before it is activated by a voice. The Applicants respectfully request further clarification about the Examiner's reasoning as to how the Bruno et al. disclose the Applicants' claimed negative switching.

In addition to lacking this claimed feature of the Applicants' invention, the combination of Ippolito et al., McCall et al. and Bruno et al. also fails to appreciate or

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recognize the advantages of the Applicants' claimed feature of the switching module including negative switching. Specifically, the Applicants' claimed switching module including negative switching "allows a camera view to be switched without delay. Even a short delay between the time when a person begins speaking and the time when the camera view shows the speaker can be quite distracting to a viewer. This camera switching latency can distract the viewer to the point that the viewer has a negative viewing experience" (specification, paragraph 0054, lines 2-5). The combination of Ippolito et al., McCall et al. and Bruno et al. does not discuss or appreciate these advantages of the Applicants' claimed feature of a switching module capable of providing negative switching.

Therefore, as set forth in *In re Fine* and MPEP § 2142, the combination of Ippolito et al., McCall et al. and Bruno et al. simply cannot render the Applicants' claimed invention obvious. Consequently, because a prima facie case of obviousness cannot be established due to the lack of "some teaching, suggestion, or incentive", the rejection must be withdrawn. MPEP 2143.01; ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

Accordingly, the Applicants respectfully submit that independent claim 24 is patentable under 35 U.S.C. § 103(a) over Ippolito et al. in view of McCall et al. as applied to claim 21 and further in view of Bruno et al. based on the legal and technical arguments set forth above. The Applicants, therefore, respectfully request reexamination, reconsideration and withdrawal of the rejection of claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Ippolito et al. in view of McCall et al. as applied to claim 21 and further in view of Bruno et al..

Conclusion

In view of the amendments to claims 1, 16 and 18 and the arguments set forth above, the Applicants submit that claims 1-13 and 15-30 are in immediate condition for allowance. The Examiner, therefore, is respectfully requested to withdraw the

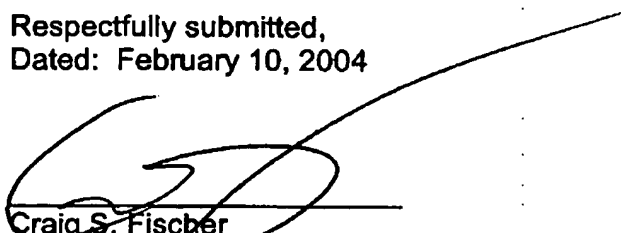
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outstanding rejections of the claims and to pass all of the claims of this application to issue.

In an effort to expedite and further the prosecution of the subject application, the Applicants kindly invite the Examiner to telephone the Applicants' attorney at (805) 278-8855 if the Examiner has any comments, questions or concerns, wishes to discuss any aspect of the prosecution of this application, or desires any degree of clarification of this response.

Respectfully submitted,
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